

Body Camera Comparison

	Taser Axon Body 2	VieVu LE4	Digital Ally FirstVu	WatchGuard VistaHD
Field of View:	142°	95°	130°	130°
Record Time:	12+ hrs.	12 hrs.	4.5 hrs	6 hrs
Video Storage:	Up to 70 hrs.	Up to 50 hrs.	Up to 16 hrs.	6 hrs
Resolution:	1080p/720p/480p	1080p/720p/480p	720p/480p	720p/480p
Durability Standard:	Waterproof	Water Resistant	Unknown	Water Resistant
Pre-Event Buffer:	30 secs – 2 mins	30 secs	Up to 1 minute	Yes
GPS:	Yes	No	Through App	No
Bluetooth:	Yes	No	No	No
Mobile Integration:	Axon View	Veripatrol App	VuVault Go	No
Video Markers:	Yes	No	Yes	No
Firmware Updates:	Dock	USB	USB	Dock
CAD/RMS Integration:	Yes	No	No	No
Unlimited Storage:	Yes	No	No	No
Seattle PD Submission Evaluation**:	792.02/1150	788/1150	434.94/1150	464.41/1150
Seattle PD Technical Evaluation**:	421/500	252/500	-	-

- Taser is a publically traded company which began providing service to the public safety market in 1993. Taser entered the on-officer video and digital evidence market in 2006. Since that time, they have continually improved products and technology while providing service in over seven regions around the globe. Their cloud based evidence storage platform “Evidence.com” has been in use since 2009.
- VieVu, LLC. was formed in 2007 and entered the body camera market. VieVu was acquired by privately held Safariland, LLC in 2015. While entrenched as a major company in the body camera field, their cloud based evidence storage solution was just implemented and tested in 2015.
- Digital Ally was founded in 2003. Digital Ally does not have a fully integrated web based storage solution, which would require on-site evidence storage.

- WatchGuard, LLC was created in 2002 and became heavily involved in the In-Car video camera systems. In 2009, they introduced their first body camera. Watchguard does not have a fully integrated web based storage solution.

Maryland Agencies Using Taser Body Cameras:

Baltimore City Police Department	Fruitland Police Department	Perryville Police Department
Baltimore County Police Department	Gaithersburg Police Department	Prince Georges Co. Department of Corrections
Cambridge Police Department	Hagerstown Police Department	Princess Anne Police Department
Catoctin Mountain National Park	Hurlock Police Department	Queen Anne's County Sheriff's Office
Edmonston Police Department	Laurel Police Department	Salisbury Police Department
Elkton Police Department	Montgomery County Police Department	Snow Hill Police Department
Fort Meade Police Department	Mount Rainier Police Department	Takoma Park Police Department

Attachments:

- Cincinnati Police Department 2016 Body Worn Camera Evaluation – Comparing Taser and VieVu products.
- Seattle Police Department Body Camera RFP Scoring (Round 3 scoring – Base on product specifications, Round 4 scoring – Field Test).
- Axon Body 2 product manual excerpt regarding Radio waves and emissions.

Cincinnati Police Department
2016 Body Worn Camera Evaluation Project



Initial Product Testing Report
March 3, 2016

Sergeant Ryan Smith, Technology & Systems Section, conducted initial product testing in January and February, 2016, of the Body Worn Camera (BWC) systems chosen by the BWC Selection Committee. This testing phase was designed to familiarize Department personnel with the competing BWC systems, specifically the TASER Axon Body 2 and VIEVU LE4, sufficient to move forward with field testing in District Three. The selected BWC vendors provided training to Records Unit and City of Cincinnati Law Department personnel to facilitate their process and evaluation of the BWC systems during initial and field testing. Sergeant Smith recorded numerous BWC videos in various environmental conditions to determine the most advantageous BWC solution. The following qualitative analysis of the competing BWC vendors using the approved RFP Scoring Matrix categories is forwarded to the RFP Selection Committee for their consideration.

Category #1: Field of View

The TASER Axon Body 2 unit has a 142 degree field of view, while the VIEVU LE4 BWC unit has a 95 degree field of view. The VIEVU LE4 BWC field of view provides a narrower perspective with more realistic depth perception. The TASER Axon Body 2 BWC provides a wider perspective with visible distortion, particularly on the horizontal edges of recorded video ("fisheye effect").

Analysis: The TASER Axon Body 2 BWC, even with this observed visual distortion, provided a significantly more advantageous perspective with this wider field of view. This advantage is most pronounced when reviewing CPD BWC test videos filmed at the Police Academy, specifically the "box drills." The narrower field of view of the VIEVU LE4 BWC requires more specific and deliberate placement on the officer to compensate, and cannot capture the entirety of the simulated scenario regardless of placement.

Category #2: Video Quality

The TASER Axon Body 2 unit may record video at 480P (High or Low Standard Definition), 720P, and 1080P. The VIEVU LE4 BWC unit may record video at 480P (Standard Definition), 720P, and 1080P.

Analysis: The TASER Axon Body 2 BWC recorded video at all resolutions with more color clarity (accuracy) and contrast (sharpness). The VIEVU LE4 BWC recorded video was very muted for video at all resolutions, specifically under ideal conditions in artificial light (Thorntons Gas Station video), with very apparent lens flare (from the store lights or sunlight through the windows). The VIEVU LE4 BWC system records video with less judder (motion sway) and less pixilation when the subject wearing the BWC was in motion.

Category #3: Night Recording

Analysis: The TASER Axon Body 2 BWC recorded night video at all resolutions with more color clarity (accuracy) and contrast (sharpness). The VIEVU LE4 video was significantly more muted during low light testing, specifically drab color palettes and more apparent lens flare. The TASER Axon Body 2 BWC performed significantly better under extreme low light conditions, specifically the "police car" evening BWC videos with and without a flashlight.

Category #4: Audio Quality

Analysis: The TASER Axon Body 2 BWC recorded audio with greater fidelity (accuracy), and was able to record better environmental acoustics. This was most pronounced during the testing conducted at the Police Academy, specifically the "crack" of a gun shot, and ambient audio as sound from verbal commands echoed in the room.

The VIEVU LE4 BWC sound quality was more adversely affected by low to moderate wind shear under identical environmental conditions. Both BWC systems were adversely affected by extreme wind conditions (20+ miles per hour winds).

Category #5: Battery Life

Both BWC systems possess sufficient battery life to enable pre-event recording buffering during a ten hour shift. The TASER Axon Body 2 BWC with pre-event recording buffering enabled may be set for any video resolution (480P, 720P, or 1080P). The VIEVU LE4 BWC with pre-event recording buffering enabled is locked by the software to only record at 480P. Sergeant Smith confirmed with the VIEVU vendor representative regarding this issue. The VIEVU vendor representative confirmed this locked software setting is necessary to provide sufficient battery life: a higher resolution would drain the battery at a faster rate.

Analysis: The TASER Axon Body 2 BWC has a more efficient battery process than the VIEVU LE4 BWC, sufficient to maintain pre-event record buffering at a higher resolution. BWC videos recorded at a higher resolution provide better clarity and contrast, with minute details more readily apparent. The TASER Axon Body 2 will be set at 720P with pre-event record buffering enabled during field testing, while the VIEVU LE4 must be set at 480P to provide sufficient battery life for pre-event record buffering.

Category #6: Entering Metadata

Both BWC systems are capable of entering metadata for recorded videos, specifically the metadata requested by Records Unit to facilitate their process of retrieving BWC videos. The VIEVU LE4 BWC system requires an Android software-powered device to enter metadata, while the TASER Axon Body 2 BWC system requires an iOS-powered device. Both BWC vendors anticipate future metadata software will be available for both software platforms.

Analysis: The TASER Axon Body 2 BWC system may sync with a BWC unit through Bluetooth, requiring no additional steps or resources to connect and enter metadata. The VIEVU LE4 BWC system requires a separate Wi-Fi network to connect to for the purposes of logging into the software first, and then disconnecting from said Wi-Fi network to then connect with the BWC unit.

Category #7: Mounting

The TASER Axon Body 2 BWC unit mounting options include a “z-bracket” mount that attaches to the uniform shirt, and two magnet mounts. These mounting options are sufficient to deploy the TASER Axon Body 2 BWC unit with any CPD issued uniform, and under any environmental condition.

The VIEVU LE4 BWC unit possesses an “alligator clip” that secures to the center seam of the uniform shirt. There is no magnet mount currently available for this BWC unit. The VIEVU LE4 BWC unit could be deployed onto a CPD issued uniform, if an external cloth loop was sewn onto the outer layer sufficient to attach the “alligator clip.”

Analysis: The TASER Axon Body 2 BWC unit mounting options currently available are significantly more advantageous than the “alligator clip” of the VIEVU LE4 BWC unit. The “alligator clip” is the least secure mounting option, and has not evolved from the previous generation of this BWC system. There is no means to attach the VIEVU LE4 BWC unit to a CPD polo shirt or outer jacket save an additional cloth loop, which would be less stable and secure. The VIEVU LE4 BWC unit may easily be worn over the uniform tie when clipped to the center seam of the CPD uniform shirt.

The magnet mounts of the TASER Axon Body 2 BWC unit provide secure and immediate mounting options for any CPD issued uniform. The “z-bracket” mount is the most

secure and stable mounting option for the TASER Axon Body 2 BWC, but this option precludes wearing a tie with the CPD uniform shirt.

Category #8: Docking

Both BWC docking stations will securely upload recorded video while charging the BWC units. The TASER Axon Body 2 BWC dock provides six docking stations per dock, while the VIEVU LE4 BWC dock provides ten docking stations per dock.

Analysis: The VIEVU LE4 BWC dock performance has been problematic: VIEVU BWC videos take significantly longer to upload and in one instance, failed to upload for several hours. The VIEVU vendor representative has been advised that dates and timestamps of recorded VIEVU BWC videos have been off by a few days, or time shifted by one hour or more. The VIEVU LE4 BWC unit must be carefully inserted into the docking station, as the rubber flap on the underside of the unit must be precisely swiveled or the BWC unit will not dock properly.

The TASER Axon Body 2 BWC dock has performed exceptionally: videos are almost instantly uploaded when the BWC unit is plugged in. This BWC dock, while providing four less docking stations per dock, is significantly smaller and lighter, which may facilitate more efficient dock mounting options within the police districts. The TASER BWC unit docks quickly and securely into the docking station without any additional manipulation.

Category #9: Redaction

Both BWC systems include software sufficient to redact both audio and video from BWC recordings, including “auto-redaction” of faces and objects. Neither the TASER nor VIEVU BWC system is currently able to “auto redact” audio from BWC recordings.

Analysis: The current CPD redaction process requires redaction of any video displaying the Mobile Data Computer (MDC) screen within the police car, and any audio recording of a

person's social security number. The substantial majority of BWC redaction anticipated under the current process will be conversations between police officers and subjects, specifically the small portion of recorded audio regarding a social security number.

"Auto redaction" of faces or objects for both BWC systems is problematic at best. Both BWC systems redaction software perform unreliably through "auto redaction," largely because of movement by the officer or subject. Manual redaction of faces or objects seems more efficient at this time than relying upon the system to identify and maintain video blurring. Visual redaction of the MDC screen may easily be performed through manual redaction, as the officer wearing the BWC unit will be largely stationary in the police car.

*** pending until after the morning session w TASER

Category #10: Digital Evidence Sharing

Both BWC systems include cloud-based software, consistent with Criminal Justice Information Services (CJIS) Division standards of the United States Federal Bureau of Investigation (FBI). Both BWC systems software may review, redact, create cases, and share recorded videos through the software or emailed links to allow viewing or download of the recorded video to a computer.

Analysis: The TASER BWC software (Evidence.com) is currently more developed, user friendly, and stable. This software allows the user to "right click" to open multiple tabs and facilitate more efficient multi-tasking. TASER BWC software allows users to rename videos and cases, to provide Records Unit more efficiency to facilitate the BWC court case process of finding, redacting, and sharing recorded videos.

The VIEVU BWC software (VIEVU Solution) also allows the user to "right click" to open multiple tabs and facilitate more efficient multi-tasking. VIEVU Solution software does

Seattle Police Department



Body Camera Testing and Evaluation

RFP# SPD-3640

<http://thebuyline.seattle.gov/2016/09/11/body-worn-video-system-rfp-spd-3640/>

Posted 10/31/16

Round 3 Scoring

Summary Round 3	Possible Points	Taser	COBAN	Digital Ally	Motorola	Watch Guard	VieVu
<u>Minimum Qualifications</u>	P/F	P	P	P	P	P	P
<u>Mandatory Technical Requirements</u>	P/F	P	P	P	P	P	P
<u>Objectives Response</u>							
Camera	60	44	42	20	40	25	43
System Architecture	40	35	30	25	15	20	20
Storage	40	30	33	25	20	30	25
Camera User Management	30	17	15	20	23	15	25
Video Management System	60	40	48	25	35	10	47
Access	40	35	30	20	15	30	32
Public Disclosure Process	50	42	30	15	10	15	40
Management Support	20	10	20	10	10	8	17
System Updates	20	18	15	5	10	8	17
Training and Support	40	26	25	15	30	29	28
Strategic Plan and Roadmap	50	45	42	0	0	0	30
<u>TOTAL</u>	450	342	330	180	208	190	324
<u>Pricing Response</u>	200	79.02	42.34	69.94	64.57	96.41	200
<u>Management Response</u>							
Company Information	50	45	38	20	35	30	33
Project Approach and Schedule	50	45	45	20	40	20	45
Proposed Staff	50	45	44	15	40	25	44
Future Support and Enhancements	50	32	35	0	20	20	30
<u>TOTAL</u>	200	167	162	55	135	95	152
<u>Inclusion Plan</u>	100	24	94	10	4	9	2
<u>Security Response</u>	200	180	180	120	80	74	110
<u>ROUND 3 GRAND TOTAL</u>	1150	792.02	808.34	434.94	491.57	464.41	788

Round 4
Demo/Interview Scoring

	TOTAL POSSIBLE	TASER	COBAN	VIEVU
Camera	70	60	25	25
<i>Use</i>	25	20	5	10
<i>Wearability</i>	20	20	5	10
<i>Video Quality</i>	25	20	15	5
User Management and Storage	60	53	50	50
<i>Roles/Permission</i>	20	20	15	17
<i>Reporting</i>	20	15	15	15
<i>Storage</i>	20	18	20	18
Video Management System	70	53	55	52
<i>Search and Retrieval</i>	25	20	25	20
<i>Editing/Marking</i>	15	8	10	12
<i>Distribution</i>	15	10	15	10
<i>Non-BWV Evidence</i>	15	15	5	10
Public Disclosure	70	50	50	45
<i>Redaction</i>	50	30	35	30
<i>Search/Retrieve/Share</i>	20	20	15	15
Discovery	60	55	18	15
<i>Search/Share</i>	20	20	5	10
<i>Retention</i>	20	20	5	0
<i>Edit/Mark</i>	10	5	5	5
<i>Courts</i>	10	10	3	0
Security, Architecture, and Misc.	70	55	40	40
<i>Security</i>	40	35	20	20
<i>Architecture</i>	20	15	15	15
<i>Misc.</i>	10	5	5	5
TOTAL DEMO	400	326	238	227
TOTAL TEST*	100	95	50	25
GRAND TOTAL	500	421	288	252

***Testing Methodology**

The methodology for the camera test around recording time was:

In all cases, the manufacturer's provided instruction regarding how to fully charge the batteries was followed. The camera was left on the manufacture's charge device/process until the device/camera reported 'fully charged' (usually with a green light). The cameras were left in the charging mode until we were ready to test that camera. The camera was removed from the charging device within a few seconds to just a few minutes prior to the initiation of the test. The camera was not turned on until the moment the test began, so there would be no 'pre-event' buffer in the tests.

There were no 'pre-event' buffer capabilities tested. Included in the testing methodology was the 'visual stress-test'. The stress-test simulated an active scene. We attached ribbon streamers to an active fan. The fan caused the different colored streamers to wave and float in front of the camera forcing an update of the encoded scene. This would simulate an officer walking, or running, or driving. The reason for this stress-test was to test the camera encoder and processor. The busier the scene, the more active the encoder and the higher the bit-rates of the data (larger files).

Chapter 7: Troubleshooting

If you experience difficulty with your Axon Body 2 camera, first power the device down, and start it again.

If experiencing difficulty with the Axon View application, power down the mobile device, turn the device back on, and re-pair your smart device with the Axon Body 2 camera.

Customer Service

Visit www.taser.com and view the Support options, or call 1-800-978-2737.

Warranty Policy

TASER International warranty provisions are applicable on all Axon Body 2 system products. See TASER International's website, www.taser.com, for detailed warranty information.

Warnings

For a full list of the warning associated with this product, see www.taser.com.

Radio Waves



Changes or modifications to the equipment not expressly approved by the manufacturer could void the product warranty and the user's authority to operate the equipment.

Your wireless device is a radio transmitter and receiver. It is designed and manufactured not to exceed the emission limits for exposure to radio frequency (RF) energy set by the Federal Communications Commission (FCC) of the U.S. Government. These limits are part of comprehensive guidelines and establish permitted levels of RF energy for the general population. The guidelines are based on standards that were developed by independent scientific organizations through periodic and thorough evaluation of scientific studies. The standards include a substantial safety margin designed to assure the safety of all persons, regardless of age and health. Before a device model is available for sale to the public, it must be tested and certified to the FCC that it does not exceed the limit established by the government-adopted requirement for safe exposure. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits

are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient or relocate the receiving antenna.

- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult TASER International Customer Service for help.

FCC/IC NOTICE: This device meets the body worn human exposure limits found in OET Bulletin 65, 2001, and ANSI/IEEE C95.1, 1992. Proper operation of this equipment according to the instructions found in this guide will result in exposure substantially below the FCC's recommended limits. To comply with the FCC and ANSI C95.1 RF exposure limits, this device has been tested for compliance with FCC RF Exposure limits in the typical configuration. The radiated output power of this wireless device is far below the FCC radio frequency exposure limits.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

RSS 210 Warning Statement: The installer of this equipment must ensure that the antenna is located or pointed such that it does not emit RF field in excess of Health Canada limits for the general population; consult Safety Code 6, obtainable from Health Canada's Web site www.hc-sc.gc.ca/rpb.

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

THIS MODEL DEVICE MEETS THE GOVERNMENT'S REQUIREMENTS FOR EXPOSURE TO RADIO WAVES.

Section 8.4 of RSS-GEN

This Device complies with Industry Canada License-exempt RSS standard(s). Operation is subject to the following two conditions: 1) this device may not cause interference, and 2) this device must accept any interference, including interference that may cause undesired operation of the device.

Cet appareil est conforme aux normes d'exemption de licence RSS d'Industrie Canada. Son utilisation est soumise aux conditions suivantes : 1) cet appareil ne doit pas causer de brouillage, et 2) doit accepter tout brouillage, y compris le brouillage pouvant entraîner un fonctionnement indésirable.

Section 8.3 of RSS-GEN

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a

type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio ne peut fonctionner qu'au moyen d'une antenne d'un seul type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique pour les autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas celle requise pour établir une communication satisfaisante.

THIS MODEL DEVICE MEETS THE GOVERNMENT'S REQUIREMENTS FOR EXPOSURE TO RADIO WAVES.

CE Declaration of Conformity

TASER International declares that this Axon system is in compliance with the requirements and other relevant provisions of the RTT&E Directive 1999/5/EC regarding radio and telecommunications equipment and the Directive 2014/30/EU regarding electromagnetic compatibility. A copy of the original Declaration of Conformity can be found at www.taser.com.